

TWO NEW SPECIES OF *QUADRACEPS*
(MALLOPHAGA: PHILOPTERIDAE) FROM AUSTRALIA

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Abstract.—Two new species of *Quadriceps* from Australia are described and illustrated: *Q. australis* off *Vanellus tricolor* and *Q. neoaustralis* off *Peltohyas australis*.

The avian family Charadriidae (Charadriiformes) contains at least 64 species of lapwings, plovers, killdeers, and dotterels. The Mallophaga normally found on these hosts are the amblyceran genera *Actornithophilus* Ferris and *Austromenopon* Bedford and the ischnoceran genera *Quadriceps* Clay and Meinertzhagen and *Saemundssonina* Timmermann. Several bird species have two species of *Quadriceps* and there are no records of *Quadriceps* from 23 species of these birds. The two species of *Quadriceps* herewith described and illustrated will reduce to 21 the hosts which warrant special collecting efforts.

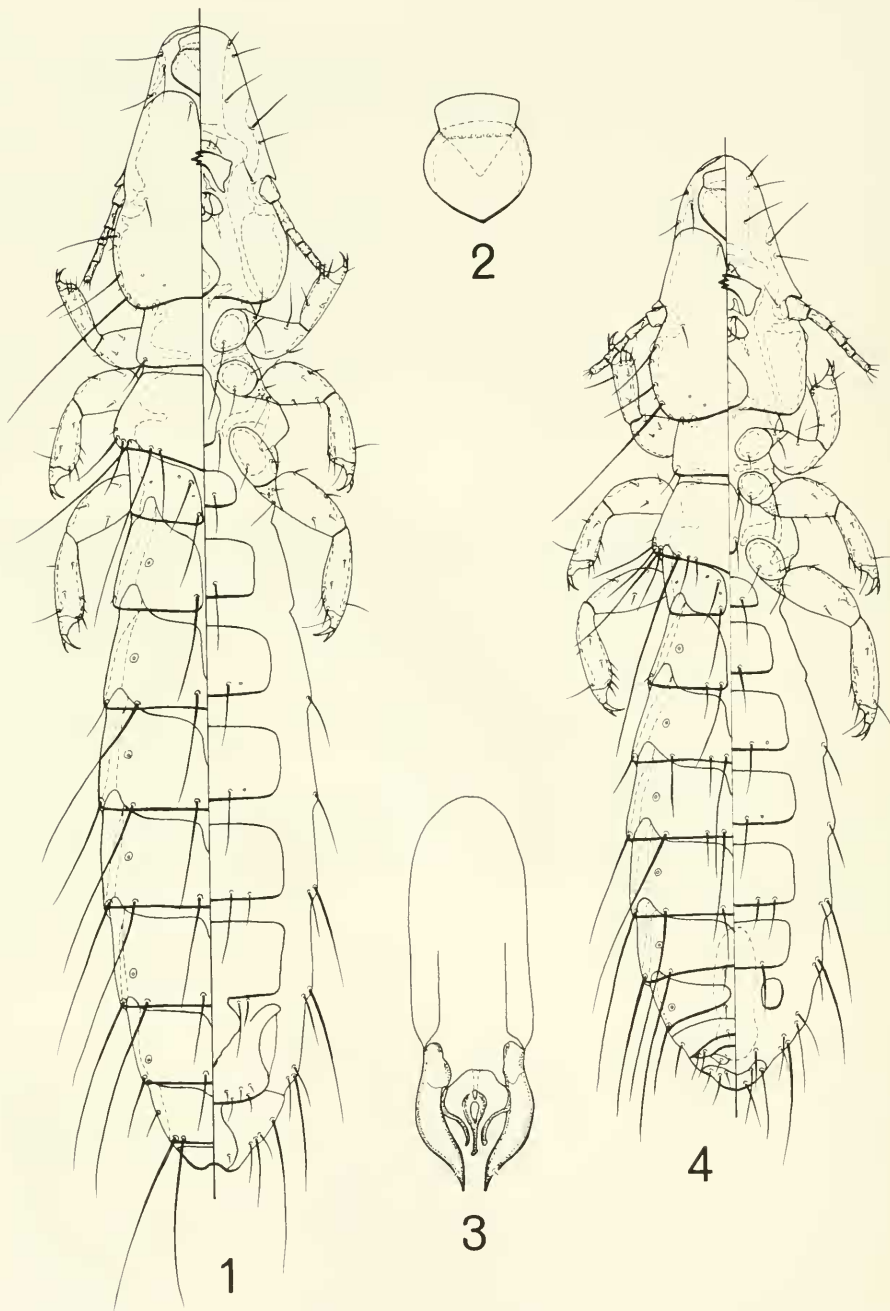
In the following descriptions, all measurements are in millimeters. The scientific names of the hosts are from Peters (1934). Paratypes of the new species will be distributed to the collections at the South Australian Museum, the National Museum of Natural History, Washington, D.C., the University of Minnesota, and Oklahoma State University.

Quadriceps australis Emerson and Price, NEW SPECIES

Figs. 1-4

Type-host: *Vanellus tricolor* Horsfield, the Banded Plover.

Male.—External morphology and chaetotaxy as in Fig. 4. Head broadest across temples, with preantennal region tapered and evenly rounded; dorsal anterior plate (Fig. 2) heart-shaped with slightly convex anterior margin; temple margin on each side with 1 very long and 2 shorter setae; antennae essentially filiform, but with somewhat enlarged basal segment and elongated second segment; temple width, 0.26-0.27; head length, 0.42-0.43. Pronotum with 1 medium seta at each lateroposterior corner; each side of pteronotum with 8 setae, including 2 very long setae; pronotum width, 0.18-0.19; pteronotum width, 0.26-0.27. Abdomen with tergite II (first apparent tergite) and III completely divided at midline, IV-VII deeply to shallowly indented medioanteriorly, VIII narrowed and divided medially, and IX evenly narrowed. Marginal tergal setae: II, 2; III, 6; IV-V, 8; VI-VII, 6; VIII, 4; with lengths and distributions as shown in Fig. 4. Sternal setae: II-V, 2; VI, 4; VII, 2; dorsal and ventral terminalia as shown, without long dorsal setae. Abdomen width, 0.34-0.36; total body length, 1.54-1.58. Genitalia (Fig.



Figs. 1-4. *Quadraceps australis*. 1, Female. 2, Female dorsal anterior head plate. 3, Male genitalia. 4, Male.

3) with basal plate longer than parameres; parameres stout, inwardly curved and pointed posteriorly, with subapical minute seta; mesosomal structures as shown; genitalia length, 0.21–0.23; genitalia width, 0.07–0.08.

Female.—External morphology and chaetotaxy as in Fig. 1. Much as for male, except as follows. Temple width, 0.29–0.30; head length, 0.44–0.46. Each side of pteronotum with only 6 setae; pronotum width, 0.20; pteronotum width, 0.28–0.30. Tergite VIII much wider, with shallow medioanterior indentation; tergite IX also wider. Marginal tergal setae: III, 4; IV–V, 6. Sternite VII with 4 setae. Dorsal and ventral terminalia as shown, with tergite IX having 2 very long setae on each lateroposterior corner; each side of last segment evenly rounded. Abdomen width, 0.38–0.40; total body length, 1.92–1.95.

Discussion.—This species resembles *Q. renschi* Timmermann, 1954, found on *Vanellus miles* (Boddaert), the Masked Plover, that occurs in New Guinea and Australia; however, the two species have distinct differences. Both sexes of *Q. australis* are smaller than for *Q. renschi*. The female subgenital plate of these two species has a different shape. The endomeres of the male genitalia of *Q. renschi* are straight, whereas they are curved for *Q. australis*. The type-host of *Q. renschi* as given in the original description by Timmermann (1954) was "*Lobibyx novaehollandiae*," which most ornithologists now consider to be *Vanellus miles novaehollandiae* (Stephens).

Material examined.—Holotype ♂ from *Vanellus tricolor* collected in 1983 at Kimba, South Australia, by J. Little (B-37571); in the South Australian Museum. Paratypes: 7 ♂, 10 ♀, same data as holotype.

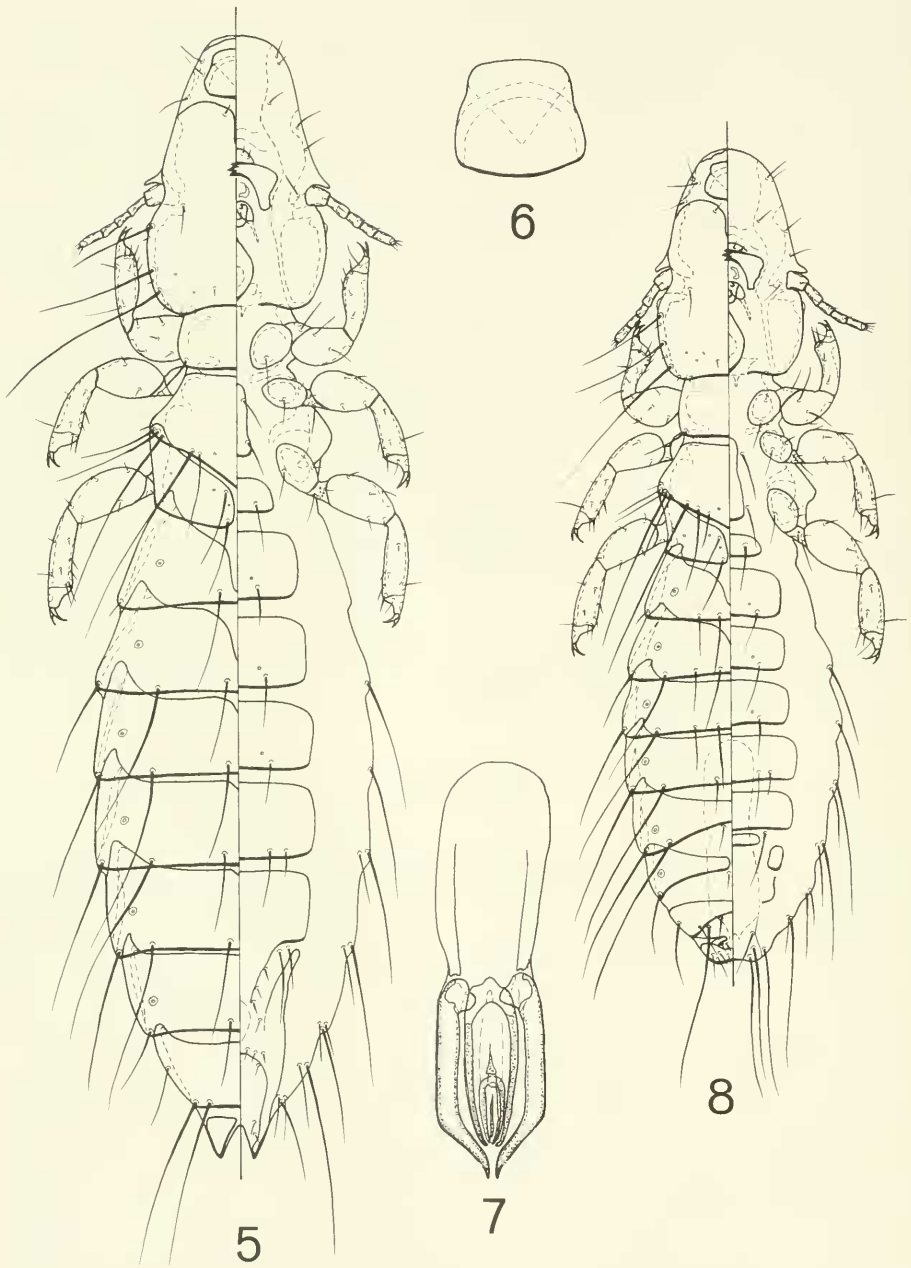
Quadriceps neoaustralis Emerson and Price, NEW SPECIES

Figs. 5–8

Type-host: Peltohyas australis (Gould), the Australian Dotterel.

Male.—External morphology and chaetotaxy as in Fig. 8. Head broadest across temples, with preantennal region tapered and evenly rounded; dorsal anterior plate (Fig. 6) subtrapezoidal, with flattened to slightly convex anterior and posterior margins; temple margin on each side with 3 long to very long setae; antennae essentially filiform, with somewhat enlarged basal segment; temple width, 0.25–0.27; head length, 0.39–0.41. Pronotum and pteronotum as for *Q. australis*; pronotum width, 0.18–0.19; pteronotum width, 0.26–0.28. Abdomen with tergite II completely divided at midline, III–IV deeply to shallowly indented at midline, V–VI not indented and evenly wide across segment, VII narrowed and not indented, VIII narrowed and divided at midline, and IX undivided and narrowed toward midline. Marginal tergal setae: II, 2; III, 6; IV–V, 8; VI–VII, 6; VIII, 4; with lengths and distributions as shown. Sternal setae: II–V, 2; VI, 4; VII, 2; dorsal and ventral terminalia as shown, with very long seta associated with posterior margin of tergite IX and 3 very long setae on each side of ventral posterior margin. Abdomen width, 0.36–0.39; total body length, 1.40–1.43. Genitalia (Fig. 7) with basal plate about length of parameres; parameres parallel along basal two-thirds, abruptly bent inward posteriorly and pointed, with subapical minute seta; mesosomal structures elongate, as shown; genitalia length, 0.35–0.37; genitalia width, 0.09–0.10.

Female.—External morphology and chaetotaxy as in Fig. 5. Much as for male,



Figs. 5-8. *Quadraceps neoaustralis*. 5, Female. 6, Female dorsal anterior head plate. 7, Male genitalia. 8, Male.

except as follows. Temple width, 0.30–0.31; head length, 0.44–0.46. Each side of pteronotum with only 6 setae; pronotum width, 0.20–0.21; pteronotum width, 0.30–0.33. Abdomen with tergites III–VII deeply to shallowly indented medioanteriorly; VIII–IX undivided and equally wide across segment. Marginal tergal setae: III, 4; IV–V, 6. Dorsal and ventral terminalia as shown, with tergite IX having 2 very long setae at each lateroposterior corner; ventrally with elongate series of short setae; each side of last segment pointed, bearing triangular dorsal sclerite. Abdomen width, 0.45–0.49; total body length, 1.78–1.92.

Discussion.—*Quadriceps neoaustralis* is related to the *Q. fissus* (Burmeister, 1838)–*Q. assimilis* (Piaget, 1890) complexes found on avian hosts of the genus *Charadrius* and related genera (Timmermann, 1954 and 1957). However, both sexes of *Q. neoaustralis* are smaller than for the related taxa. In the female of *Q. neoaustralis*, the indented tergites III–VII are unique, as are the shape of the tergal plates on VII–IX. In the male of this species, the sternal and tergal plates on VII–IX are unique, as are also the long slender tapered gently curved genitalic endomeres and the long basal plate.

Material examined.—Holotype ♂ from *Peltohyas australis* collected on July 22, 1984, at Dulkaninna, South Australia, by J. M. Bourne (B-38426); in the South Australian Museum. Paratypes: 4 ♂, 8 ♀, same data as holotype; 1 ♀, same except collected May 19, 1984, at 15 km S. of Burra, South Australia, by J. M. Bourne (B-37975).

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